

Reply to Office Action dated December 16, 2003

REMARKS

Claims 1 and 3-27 are pending in this application. By this Amendment, claims 1 and 3-12 are amended and new claims 13-27 are added. Various amendments have been made to the claims for clarity, and are unrelated to issues of patentability.

The Office Action objects to claims 1-12 because of informalities. It is respectfully submitted that the above amendments to the claims obviate the grounds for objection. Additionally, various amendments have been made to the claims for clarity as requested in the Office Action. These amendments are not necessary for patentability.

The Office Action rejects claims 7 and 8 under 35 U.S.C. §112, second paragraph. By this Amendment, dependent claim 7 is amended to obviate the grounds for rejection. Withdrawal of the rejection is respectfully requested.

The Office Action rejects claims 1-4 and 10-12 under 35 U.S.C. §103(a) over U.S. Patent 6,542,484 to Ovesjo et al. (hereafter Ovesjo) in view of U.S. Patent 6,519,237 to McDonough et al. (hereafter McDonough) and U.S. Patent 6,044,074 to Zehavi et al. (hereafter (Zehavi). Still further, the Office Action rejects claims 5 and 6 under 35 U.S.C. §103(a) over Ovesjo in view of McDonough and Zehavi and further in view of U.S. Patent 5,509,035 to Teidemann, Jr. et al. (hereafter Teidemann). Even still further, the Office Action rejects claims 7-9 under 35 U.S.C. §103(a) over Ovesjo, McDonough, Zehavi and further in view of U.S. Patent 6,061,338 to O. The rejections are respectfully traversed.

Independent claim 1 recites determining a non-orthogonality among each downlink physical channel, differently deciding each transmission starting point of the each physical

channel, if the non-orthogonality is determined to exist among the physical channels, and transmitting the downlink data through the each physical channel having a different transmission starting point.

As discussed in the present specification, physical channels that use different scrambling codes may have different starting points of transmission. A time interval (or time delay) may be provided between the starting points to minimize interference between channels.

The Office Action relies on a combination of three references, namely Ovesjo, McDonough and Zehavi, in order to find the features of independent claim 1. However, the alleged combination still does not teach or suggest all these features. Furthermore, applicant respectfully submits that the alleged combination in the Office Action is improper and therefore the Office Action fails to make a *prima facie* case of obviousness.

In particular, the Office Action asserts that Ovesjo does not expressly disclose that each non-orthogonal physical channel has a different starting point. Ovesjo's FIGs. 7A-C merely relate to allocating code sets for each angular region in beamforming. The Office Action then relies on McDonough's shifting of starting points of pseudonoise (PN) sequence in the downlink signal of several base stations. However, McDonough merely discloses a method to shift a PN sequence in a CDMA system. In McDonough, a shifting value is an offset to a base station (i.e., the shifting of PN sequence is for cell searching). This differs from claim 1 (and from Ovesjo). Additionally, the combination of Ovesjo and McDonough does not teach or suggest determining a non-orthogonality among each downlink channel and differently deciding each transmission starting point of the each physical channel, if the non-orthogonality is determined to exist among

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the physical channels. McDonough merely shows different PN pilot signals transmitted on different phases from different base stations. See col. 2, lines 55-65. This in no way suggests differently deciding each transmission starting point (of the each physical channel) if the non-orthogonality is determined to exist among the physical channels. Rather, this is merely the shifting of pseudonoise (PN) signals from base stations. There is no suggestion of how this relates to differently deciding transmission starting points based on non-orthogonality.

The Office Action then appears to rely on Zehavi's column 2, lines 16-29 as disclosing that PN spreading codes are typically shared by all communication signals in a cell, beam or sub-beam. However, Zehavi relates to a method for acquiring timing of an access transmission that uses an access probe. Zehavi simply discloses that a PN code is a spreading code in each step of the access probe. Zehavi does not relate to the technical features of independent claim 1. Further, Zehavi does not relate to the offsetting of different scrambling codes as alleged in the Office Action. Additionally, there is no suggestion of how Zehavi may be combined with the other two references so as to find the feature of differently deciding each transmission starting point of the each physical channel, if the non-orthogonality is determined to exist among the physical channels, as recited in independent claim 1. Thus, the applied references do not teach or suggest all the claimed features.

Further, the Office Action asserts that it would have been obvious to offset the scrambling codes of different codes in Ovesjo so that the non-orthogonal scrambling codes would have different starting points. The Office Action asserts that one would have been motivated to do this to further reduce interference between code sets. However, the prior art

must provide the motivation for this combination. The motivation set forth in the Office Action clearly is based on applicant's own specification (and claims) as there is no suggestion in the prior art for this motivation. In short, applicant respectfully submits that the Office Action does not provide enough motivation to make the alleged combination and therefore the combination is improper.

For at least the reasons set forth above, independent claim 1 defines patentable subject matter.

Independent claim 3 defines patentable subject matter for at least similar reasons. That is, independent claim 3 recites determining a non-orthogonality among each downlink physical channel transmitted during a same time through a same frequency bandwidth, differently deciding each transmission starting point of the each physical channel, if the non-orthogonality is determined to exist among the downlink physical channels. Independent claim 3 also recites transmitting the downlink data through the each physical channel having the decided transmission starting point. For similar reasons as set forth above, the applied references do not teach or suggest these features of independent claim 3.

Independent claim 11 defines patentable subject matter for at least similar reasons. That is, independent claim 11 recites a first group of physical channels maintaining orthogonality due to the Walsh function using a same quasi-orthogonal function (QOF) having equivalent chip transmission starting points, while a second group of physical channels not maintaining orthogonality due to use of a different quasi-orthogonal function (QOF) have different chip transmission starting points, wherein each of the physical channels of the second group has a

different starting point. The applied references do not teach or suggest these features of independent claim 11 for at least the reasons set forth below.

Independent claim 13 also defines patentable subject matter for at least similar reasons. That is independent claim 13 recites examining whether the specific codes are orthogonal with one another, determining starting times of transmitting data on the downlink physical channels, when the specific codes of the physical channels are non-orthogonal with one another, wherein the starting time of one physical channel is different from the starting time of another physical channel, and transmitting the data on the downlink physical channels at the determined starting times. The applied references do not teach or suggest all the features, and especially do not suggest that the starting time of one physical channel is different from the starting time of another physical channel.

Independent claim 20 also defines patentable subject matter for at least similar reasons. That is, independent claim 20 recites examining indices of the quasi-orthogonal functions for each physical channel, determining starting times of transmitting data on the downlink physical channels, when indices indicate that the quasi-orthogonal functions are non-orthogonal with one another, wherein the starting time of one physical channel is different from the starting time of another physical channel, and transmitting the data on the downlink physical channels at the determined starting times. The applied references do not teach or suggest all the features, and especially do not suggest that the starting time of one physical channel is different from the starting time of another physical channel.

Independent claim 23 also defines patentable subject matter for at least similar reasons.

That is, independent claim 23 recites scrambling and transmitting first data on a first physical channel by a first scrambling code, scrambling and transmitting second data on a second physical channel by a second scrambling code, and wherein a chip synchronization on the first physical channel and on the second physical channel is not made.

For at least the reasons set forth above, each of independent claims 1, 3, 11, 13, 20 and 23 define patentable subject matter. Claims 2 and 4-10 depend from claim 1, claim 12 depends from claim 11, claims 14-19 depend from claim 13, claims 21-22 depend from claim 20 and claims 24-27 depend from claim 23 and therefore defines patentable subject matter at least for this reason. In addition, the dependent claims also recite features that further and independently distinguish over the applied references.

For example, dependent claim 4 recites differently deciding, at a transmitter of the base station, chip transmission starting points of a plurality of physical channels using different scrambling codes with one another, and transmitting the downlink data through the physical channels at the differently decided chip transmission starting points. The cited combination does not teach or suggest these features for at least the reasons set forth above. Furthermore, Zehavi and McDonough may not be combined as suggested in the Office Action as they do not disclose differently deciding chip transmission starting points of a plurality of physical channels using different scrambling codes from one another. Rather, these references merely relate to pseudonoise code sequences that may be used to modulate or spread user information over a predetermined spectral band prior to modulation onto a carrier. That is, PN spreading produces a signal for transmission that has a bandwidth much greater than that of a data signal. See

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Zehavi's column 2, lines 16-29. There is no suggestion of how this may combined with McDonough so as to suggest the different transmission starting point using different scrambling codes as recited in dependent claim 4. Thus, dependent claim 4 defines patentable subject matter for at least this additional reason.

Applicant filed an Information Disclosure Statement on March 14, 2003 submitting references for the Examiner's consideration. The Examiner is respectfully requested to review these references and return an initialed Form PTO 1449 showing his consideration of these references.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance. Favorable consideration and prompt allowance of claims 1 and 3-27 are earnestly solicited. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned attorney, **David C. Oren**, at the telephone number listed below.

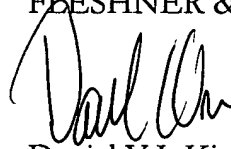
To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
FRESHNER & KIM, LLP



Daniel Y.J. Kim
Registration No. 36,186
David C. Oren
Registration No. 38,694

P.O. Box 221200
Chantilly, Virginia 20153-1200
703 766-3701 DYK:DCO/kah

Date: May 17, 2004

Please direct all correspondence to Customer Number 34610